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PATENT APPLICATION
ATTORNEY DOCKET NO. 10992824-1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
Patent Application Transmittal Letter

ASSISTANT COMMISSIONER OF PATENTS
WASHINGTON, D.C. 20231

Sir:

Transmitted herewith for filing under 37 CFR 1.53(b) is a(n): [X] Utility [ ] Design
[X] original patent application
[ ] continuating application,
[ ] continuation-in-part application
[ ] continuation or [ ]divisional
of S/N _____ filed _____.

INVENTOR(S): Huey Ly

TITLE: DEPLOYED AGENT USED IN THE INSTALLATION AND MAINTENANCE OF SOFTWARE

Enclosed are:
[X] 15 pages of Specification, Claims and Abstract
[X] Declaration and Power of Attorney. [x] signed [ ] unsigned [ ] partially signed
[X] Three Sheets of Formal Drawings (one set)
[ ] Information Disclosure Statement, including Form PTO-1449 and __ references
[ ] Priority Documents [ ] Other_____ (fee$_____)

CLAIMS FOR OTHER THAN A SMALL ENTITY

(1) FOR	(2) NUMBER FILED	(3) NUMBER EXTRA	(4) RATE	(7) FEES
TOTAL CLAIMS	20	0	X $18	$
INDEP. CLAIMS	3	0	X $78	$
MULTIPLE DEPENDENT CLAIMS			$260	$
			BASIC FEE: DESIGN ($ 310); UTILITY ($690)	$ 690
			TOTAL FILING FEE	
			OTHER	
			TOTAL CHARGES TO DEPOSIT ACCOUNT	$ 690

CHARGE $ 690.00 to Deposit Account 08-2025. At any time during the pendency of this application, please charge any fees required or credit any overpayment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.19, 1.20 and 1.21. A duplicate copy of this sheet is enclosed.

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Date of Deposit: February 22, 2000

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By _____
Typed Name: Douglas L. Weller

Respectfully Submitted,

By _____
Douglas L. Weller
Attorney for Applicant
Reg. No. 30,506
Date: February 18, 2000
Telephone: (408) 985-0642

DEPLOYED AGENT USED IN THE INSTALLATION AND MAINTENANCE OF SOFTWARE

BACKGROUND

The present invention concerns deployment of software to desktop computers and pertains particularly to a deployed agent used in the installation and maintenance of software.

They are many ways computers linked together in a local area network (LAN) can run applications. Applications can be run from a central location such as a server. Alternatively, applications can be installed on individual computers. Each method has benefits and drawbacks.

For example, when applications are run from a central server, this greatly simplifies the maintenance of the applications. However, one drawback of running applications from a central server is that this requires a lot of network bandwidth. Also, because of lost network connections, applications can fail intermittently.

When applications are run on individual computers, this reduces the amount of network bandwidth required. Also, lost network connections do not necessarily lead to application failures on individual computers. However, maintaining applications on individual computers is more complicated. It is difficult to ensure sufficient access and privilege to manage, from a central location, different applications residing in many computers.

Automated software distribution system can provide a solution to some of the aforementioned problems. However, depending upon how this is done, it can result in many additional problems.

SUMMARY OF THE INVENTION

In accordance with the preferred embodiment of the present invention, a managing computer manages applications residing on a managed computer. An agent is forwarded from the managing computer to the managed computer. The agent runs on the managed computer. The agent maintains specified applications residing on the managed computer. The agent also performs requests made by the managing computer.

In the preferred embodiment, the agent detects lost network connections. The agent also monitors network connection speed between the managed computer and the managing computer to determine a best time to transfer data from the managing computer to the managed computer. In one embodiment, the agent stops all network applications on the managed computer when the network connection speed is below a predetermined threshold. The agent also can monitor the integrity of specified applications within the managed computer to ascertain when repair is needed. The agent also downloads and installs specified applications from the managing computer to the managed computer.

The agent monitors communications from the managed computer to determine when the managed computer desires the agent to take a requested action. The requested action can be, for example, to uninstall an application, to stop an application or to upgrade an application.

The present invention greatly simplifies the maintenance, from a central location, of applications distributed on many different computer systems.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 illustrates distribution of agents from a managing computer to managed computers in accordance with a preferred embodiment of the present invention.

Figure 2 illustrates information flow between agents located within managed computers and a managing computer in accordance with a preferred embodiment of the present invention.

Figure 3 shows a block diagram of an agent used for software distribution and maintenance in accordance with a preferred embodiment of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Figure 1 illustrates distribution of an agent 10 from a managing computer 20 to a managed computer 21, a managed computer 22, a managed computer 23 and a managed computer 24. Agent 10 is used for software distribution and maintenance in accordance with a preferred embodiment of the present invention.

Agent 10 is "pushed" or "pulled" from managing computer 20 to managed computers 21 through 24. Agent 10 then installs itself on each of managed computers 21 through 24 based on the configuration of agent 10 and the platform on which managed computers 21 through 24 run.

For example, managed computers 21 through 24 are on a list of specified attended and unattended computers targeted by managing computer 20. If any of managed computers 21 through 24 are shut off when managing computer 20 will periodically checks and pushes the agent to targeted computer as soon as managing computer 20 detects the managed computer is turned on.

Figure 2 shows agent 10 residing, after installation, within all of managed computers 21 through 24. Agent 10 performs self-maintenance within managed computers 21 through 24. In addition, depending upon the capability and configuration of agent 10, agent 10 installs and maintains specified applications and agents within each of managed computers 21 through 24. Maintenance includes, for example, making updates to the specified applications when new versions are available on the managing computer. Agent 10 also performs requests issued from managing computer 21 through 24.

In addition, agent 10 detects and provides remedies of abnormal conditions within managed computers 21 through 24. For example, agent 10 detects lost network connections. When a lost network connection is detected. agent 10 stops network applications to reduce impact on network performance. Agent 10 also detects integrity problems and performs necessary repairs.

Figure 3 is a block diagram of agent 10 after installation. Agent 10 includes a network speed sensor 17, an integrity sensor 16 and an action sensor 15 all interfacing to a main engine 11, as shown. Main engine 11 includes perform action request logic 12, repairing logic 13 and scheduling logic 14.

Network speed sensor 12 signals main engine 11 when to pull down application files, and when to start and stop an application agent. Integrity sensor 16 signals main engine 10 to repair a particular agent and/or applications. Action sensor 15 signals main engine 11 when an action is requested.

Table 1 below lists simplified pseudo code that illustrates functionality of network speed sensor 17:

Table 1

```
/***Monitor the connection speed between client (managed
computer) and server.  ***/

CheckNetworkThreshold (Threshold Bit/Sec)
{
  While ( not terminate)
  {
       Mark StartTime
       Read X number of bytes from Compress file on server.
       Mark EndTime.
       AccessRate  = (X * 8 bits) / EndTime – StartTime
       If (AccessRate > Threshold)
          Set NetworkThreshold Event below Specified Threshold.
          Wait For Acknowledgment.
       Else
          Sleep for number of secs
       Continue
  }
    Quit.
}
```

Table 2 below lists simplified pseudo code that illustrates functionality of integrity sensor 16:

Table 2

```
/***Detect if any  specified integrity has been violated, such
as a missing file, a registry deleted, an application
uninstalled***/

CheckForIntegrity ( List of Item to check)
{
    While ( not terminate)
    {
       For ( n = FirstItem to LastItem)
        {
            If ( nItem not Exist)
            {
                  Set Integrity Event
                  Wait For Acknowledgment.
            }
        }
        Sleep for number of secs.
    }
}
```

Table 3 below lists simplified pseudo code that illustrates functionality of action sensor 15:

Table 3

```
/***Monitors if any action has been issued.***/

CheckForActionRequest()
{
    While ( not Terminate)
    {
     If ( Receive Action request notification)
     Case Action request:
     {
          Uninstall:
              Set Event Uninstall
               Quit.
           Stop an application:
              Set Event Stop application X.
            Upgrade:

               Set Event Upgrade.
       }
        Sleep for n secs
     }
     Quit.

}
```

Table 4 below lists simplified pseudo code that illustrates functionality of main engine 11:

Table 4

```
/*** Monitors a set of events and perform task accordingly***/

While ( not Terminate)
{
    If (NetworkThreshold Event is set)
     {
        Stop all network applications.
        Reset NetworkThreshold  Event}
     }
    If ( Integrity Event set)
    {
         Perform repairing process
        Reset Integrity Event
     }
    If ( ActionRequest Event set)
    {
       Case ( ActionRequest Event)
           Uninstall Event Set:
               Stop all applications
               Perform Uninstall.
               Quit.
           StopApplication Event Set:
               Stop specified application.
               Reset ActionRequest Events.
           Upgrade Event Set:
               Stop All applications.
               PerformUpgrade.
               Reset Upgrade Event.
       }
        Perform Scheduling, this process determines start or stop an
    application.
        Sleep for n secs.
}
```

The foregoing discussion discloses and describes merely exemplary methods and embodiments of the present invention. As will be understood by those familiar with the art, the invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. Accordingly, the disclosure of the present invention is intended to be illustrative, but not limiting, of the scope of the invention, which is set forth in the following claims.

CLAIMS

I Claim:

1. A method by which a managing computer manages applications residing on a managed computer, the method comprising the steps of:

(a) forwarding an agent from the managing computer to the managed computer; and,

(b) running the agent on the managed computer, the agent performing the following substeps:

(b.1) maintaining specified applications residing on the managed computer, and

(b.2) performing requests made by the managing computer.

2. A method as in claim 1 wherein in step (b) the agent additionally performs the following substep:

(b.3) detecting lost network connections.

3. A method as in claim 1 wherein in step (b) the agent additionally performs the following substep:

(b.3) monitoring network connection speed between the managed computer and the managing computer to determine a best time to transfer data from the managing computer to the managed computer.

4. A method as in claim 1 wherein in step (b) the agent additionally performs the following substep:

(b.3) monitoring integrity of specified applications within the managed computer to ascertain when repair is needed.

5. A method as in claim 1 wherein in step (b) the agent additionally performs the following substep:

(b.3) monitoring communications from the managed computer to determine when the managed computer desires the agent to take a requested action.

6. A method as in claim 5 wherein in substep (b.3) wherein the requested action is to uninstall an application.

7. A method as in claim 5 wherein in substep (b.3) wherein the requested action is to stop an application.

8. A method as in claim 5 wherein in substep (b.3) wherein the requested action is to upgrade an application.

9. A method as in claim 1 wherein in step (b) the agent additionally performs the following substeps:

(b.3) monitoring network connection speed between the managed computer and the managing computer; and,

(b.4) stopping all network applications on the managed computer when the network connection speed is below a predetermined threshold.

10. A method as in claim 1 wherein in step (b) the agent additionally performs the following substeps:

(b.3) downloading a specified application from the managing computer to the managed computer; and,

(b.4) installing the specified application.

11. An agent running on a managed computer managed by a managing computer, the agent comprising:

an integrity sensor that monitors integrity of specified applications within the managed computer to ascertain when repair is needed;

an action sensor that monitors communications from the managed computer to determine when the managed computer desires the agent to take a requested action; and,

a main engine that maintains the specified applications and performs the requested action.

12. An agent as in claim 11 additionally comprising:

a network speed sensor that monitors network connection speed between the managed computer and the managing computer to determine a best time to transfer data from the managing computer to the managed computer.

13. An agent as in claim 11 wherein the requested action is to uninstall an application.

14. An agent as in claim 11 wherein the requested action is to stop an application.

15. An agent as in claim 11 wherein the requested action is to upgrade an application.

16. An agent as in claim 10 additionally comprising:

a network speed sensor that monitors network connection speed between the managed computer and the managing computer, wherein the main engine stops all network applications on the managed computer when the network connection speed is below a predetermined threshold.

17. Storage media that store programming code which when run implements an agent running on a managed computer managed by a managing computer, the agent comprising:

an integrity sensor that monitors integrity of specified applications within the managed computer to ascertain when repair is needed;

an action sensor that monitors communications from the managed computer to determine when the managed computer desires the agent to take a requested action; and,

a main engine that maintains the specified applications and performs the requested action.

18. Storage media as in claim 17 wherein the agent additionally comprises:

a network speed sensor that monitors network connection speed between the managed computer and the managing computer to determine a best time to transfer data from the managing computer to the managed computer.

19. Storage media as in claim 17 wherein the requested action is on of the following:

an instruction to uninstall an application;

an instruction to stop an application; and,

an instruction to upgrade an application.

20. Storage media as in claim 17 wherein the agent additionally comprises:

a network speed sensor that monitors network connection speed between the managed computer and the managing computer, wherein the main engine stops all network applications on the managed computer when the network connection speed is below a predetermined threshold.

ABSTRACT

A managing computer manages applications residing on a managed computer. An agent is forwarded from the managing computer to the managed computer. The agent runs on the managed computer. The agent maintains specified applications residing on the managed computer. The agent also performs requests made by the managing computer.

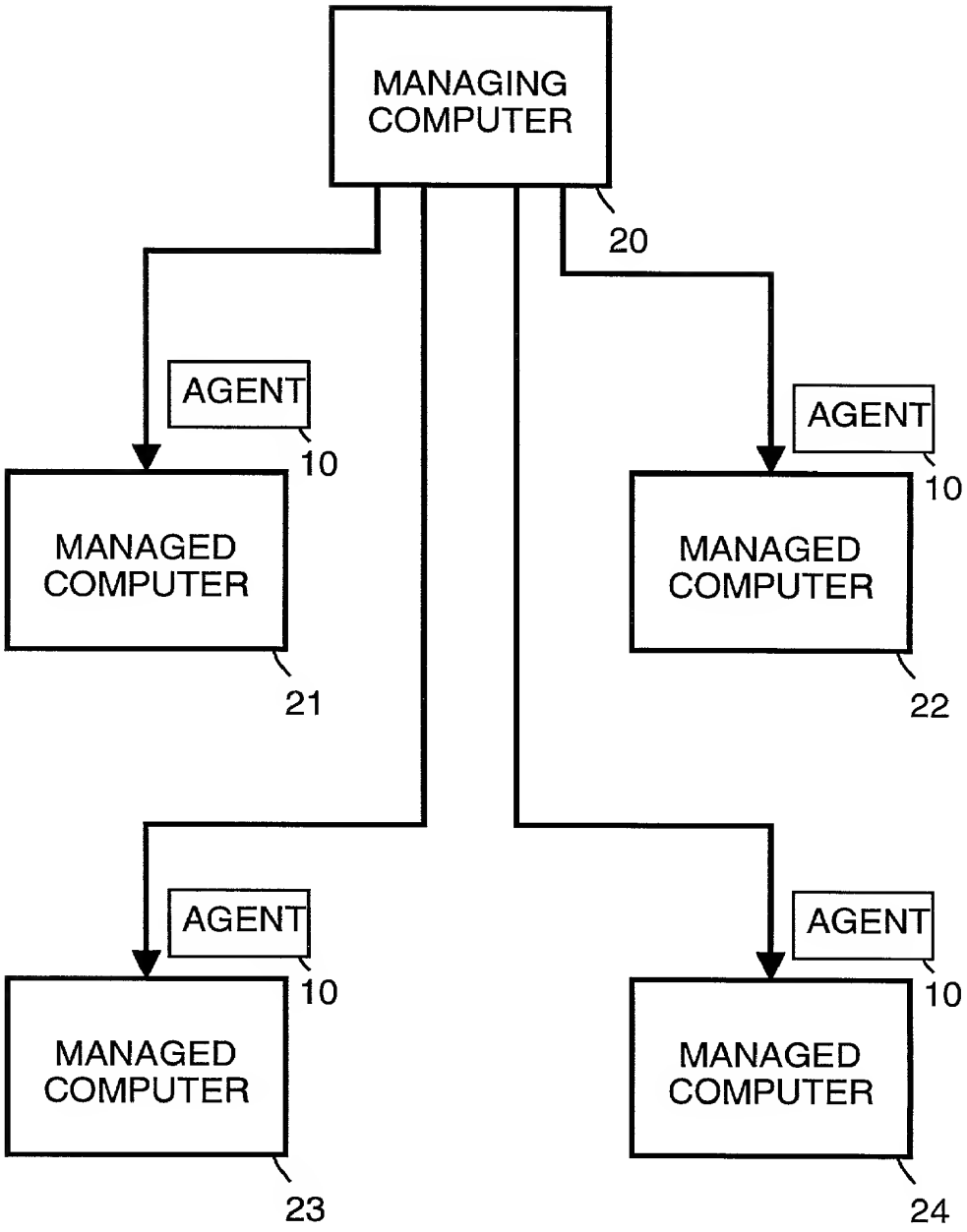
MANAGING COMPUTER
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FIGURE 1

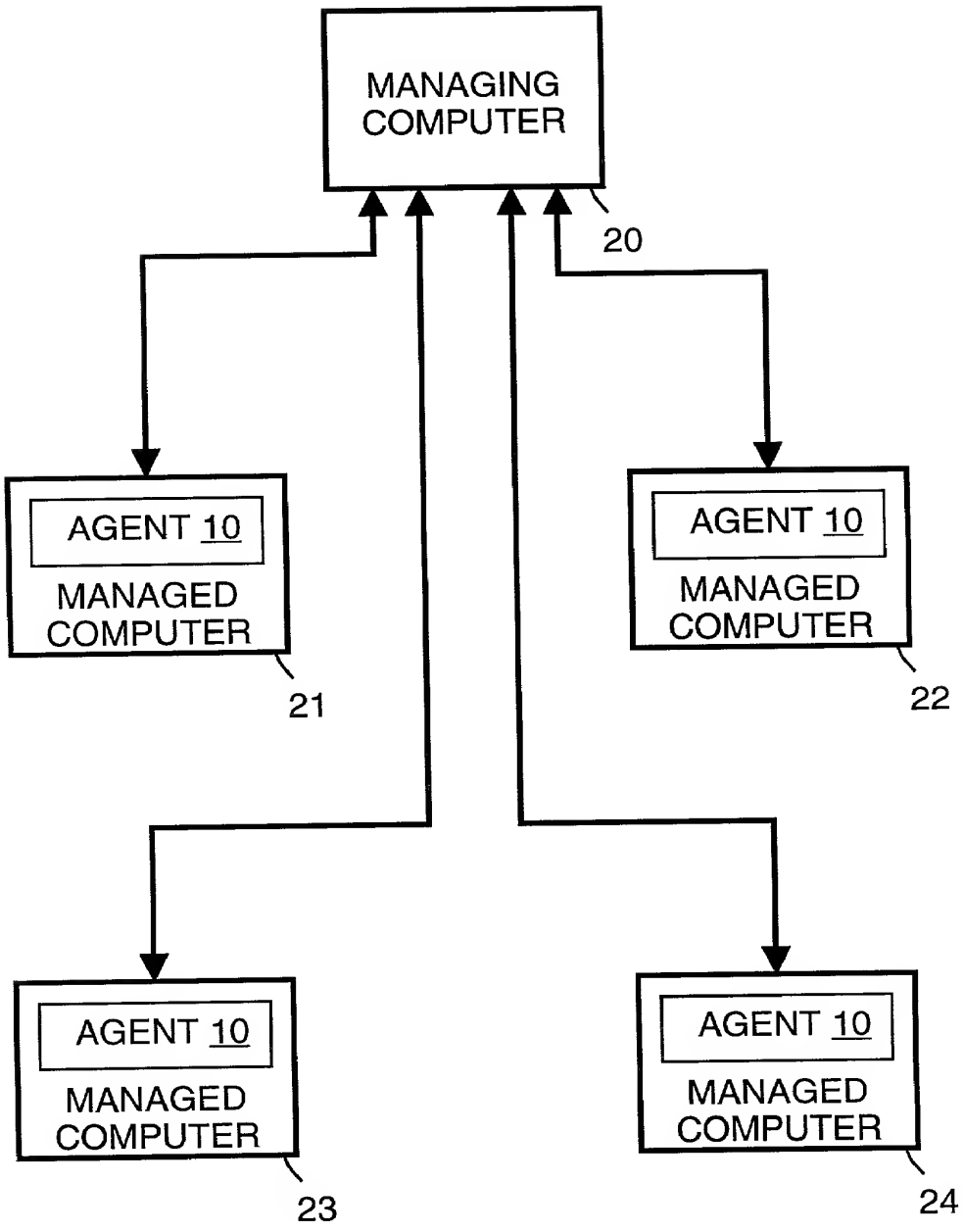
MANAGING COMPUTER
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FIGURE 2

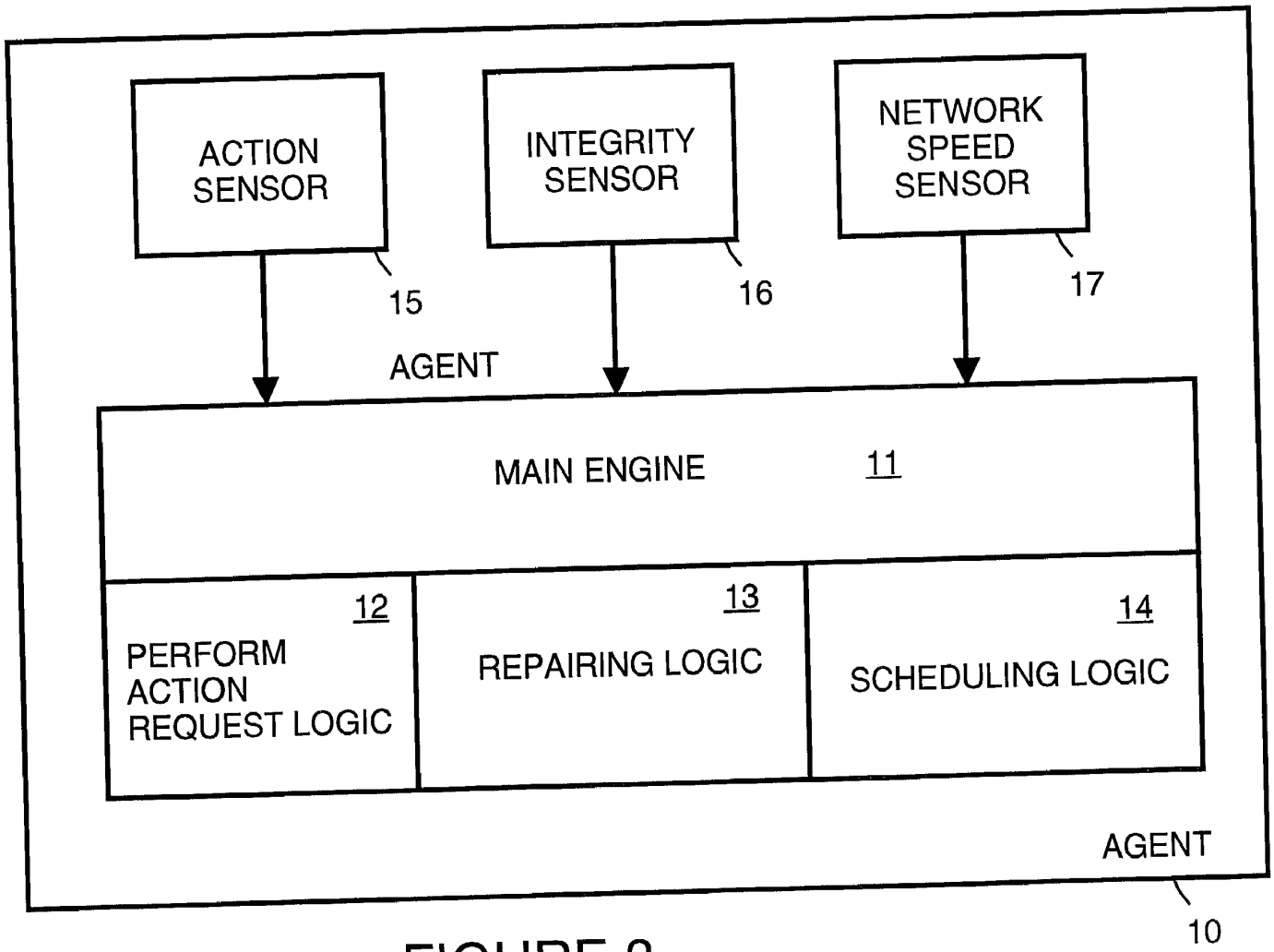
ACTION SENSOR
INTEGRITY SENSOR
NETWORK SPEED SENSOR
15
16
17
AGENT
MAIN ENGINE
11
12
PERFORM ACTION REQUEST LOGIC
13
REPAIRING LOGIC
14
SCHEDULING LOGIC
AGENT
10

FIGURE 3

PATENT APPLICATION

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION — **Attorney Docket No.** 10992824-1

As a below named inventor, I hereby declare that:

My residence/post office address and citizenship are as stated below next to my name;
I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

DEPLOYED AGENT USED IN THE INSTALLATION AND MAINTENANCE OF SOFTWARE

the specification of which is attached hereto unless the following box is checked.

[ ] was filed on _____ as Application Serial _____ or PCT International Application Number _____ and was amended on _____ (if applicable).

I hereby state that I have reviewed and understood the contents of the above-identified specification, including the claims, as amended by any amendment(s) referred to above. I acknowledge the duty to disclose all information which is material to patentability as defined in 37 CFR 1.56.

Foreign Application(s) and/or Claim of Foreign Priority

I hereby claim foreign priority benefits under Title 35, United States Code Section 119 of any foreign application(s) for patent or inventor(s) certificate listed below and have also identified below any foreign application for patent or inventor(s) certificate having a filing date before that of the application on which priority is claimed:

COUNTRY	APPLICATION NUMBER	DATE FILED	PRIORITY CLAIMED UNDER 35 U.S.C. 119
			YES:___ NO:___
			YES:___ NO:___
			YES:___ NO:___

Provisional Application

I hereby claim the benefit under Title 35, United States Code Section 119(e) of any United States provisional application(s) listed below:

APPLICATION SERIAL NUMBER	FILING DATE

U. S. Priority Claim:

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

APPLICATION SERIAL NUMBER	FILING DATE	STATUS (patented/pending/abandoned)

POWER OF ATTORNEY:

As a named inventor, I hereby appoint the attorney(s) and/or agent(s) listed below to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

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Douglas Gilbert (408) 447-4447

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of # 1 joint inventor: Huey Ly **Citizenship:** Canada

Residence/Post Office Address: 19 Bayview, Buena Park, California 90621

X _____ 02/14/2006

Inventor's Signature **Date**